

## **REMARKS/ARGUMENTS**

Claims 1-20 were originally filed in this application.

In this amendment, Claims 1, 8, 10, 11, 13, 14, 15, and 16 have been amended.

Claims 2, 7 and 12 have been canceled without prejudice to filing continuing applications with respect thereto.

Claims 3-6, 9, and 17-20 remain unchanged.

As set forth below, the Claims as now presented are believed to be in condition for allowance. Reconsideration of the Application and issuance of a Notice of Allowability are therefore respectfully requested.

### **Section 112 Rejections**

The Examiner rejected Claims 8-9, 11 and 16-20 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter Applicants regard as the invention. The Examiner specifically addressed 3 items which he asserted made the claims indefinite. Initially, the Examiner objected to the use of "ternary element" in the claims. As seen in the search results from the Patent Office web site attached hereto as Exhibit A, the phrase "ternary element" is used in at least 65 patents and appears in the claims of at least 21 patents and in the abstract of at least 11 patents. The front pages of the noted 11 patents in which "ternary element" appears in the abstract and the claims from the noted 21 patents in which "ternary element" appears in the claims are attached as part of Exhibit A. In view of the wide spread use of the term

"ternary element" by those skilled in the art, the use of "ternary element" in the claims is not believed to render the Claims indefinite.

The Examiner also questions how "a boron carbide [can] include nitrogen". The Examiner appears to be referring to Claim 11 which provides that "the boron carbide includes nitrogen." It is well known that carbides can be formed in either lattice or amorphous structures, and that in either case the carbide can be doped with other elements. In Claim 11, the carbide (which is a boron carbide) is doped with nitrogen. Applicants respectfully assert that providing that a carbide can include additional elements does not render the claim indefinite.

Lastly, the Examiner asserts that "a 'coating ... applied to the bearing cage' and then comprising [a] layer ... applied to ... the bearing" is contradictory. Applicants appreciate the Examiner's notice of this. This was a typographical error in Claim 16. Claim 16 has been amended to provide that the adhesion layer of the coating is applied to the "bearing cage". The word "cage" was inadvertently left out. In view of this correction, Claims 16-20 are now clear as to what element of the bearing the coating is applied to.

In view of the forgoing, Applicants respectfully assert that the Claims all comply with the requirements of §112. Withdrawal of the §112 rejections is therefore requested.

In view of the fact that no rejections were made against Claims 16-20 under 35 U.S.C. §102 or 35 U.S.C. §103, Claims 16-20 are now believed to be in condition for allowance.

## **Section 102 Rejections**

The Examiner rejected Claims 1-7 under 35 U.S.C. §102(e) as being anticipated by Horton et al. (Pat. No. 6340245). Independent Claim 1 provides that the coating of the invention comprises (1) an adhesion layer; (2) a primary coating layer; and (3) a solid lubricant layer. Claim 1 has been amended to include the subject matter of Claims 2, 7 and 12 to further define within Claim 1 the composition of the coating. While Horton et al. disclose a coating, Horton et al. do not teach or suggest the coating as now set forth in Claim 1. In particular, Horton et al. do not teach or suggest the use of a primary coating layer in addition to a solid lubricant layer, as set forth in Claim 1, as originally filed. Rather, the Horton et al. coating comprises a metallic interlayer (3), a transition layer (4), and a layer (8) comprised of a metal mixed diamond-like-carbon (DLC) coating. The transition layer of Horton et al. does not correspond to the primary coating layer of Claim 1. This is evident from the fact that Applicants' claim 4 adds in a transition layer. Hence, the transition layer is different from the primary coating layer. Further, Horton et al. do not teach or suggest the composition of the coating as now set forth in Claim 1. For example, Horton et al. do not teach or suggest the composition of Applicants' primary layer or Applicants' solid lubricant layer. For at least these reasons, Horton et al. do not anticipate or make obvious the subject matter of Claim 1; and, Claim 1 is thus believed to be allowable over Horton et al. Claims 2-7 depend from Claim 1 and are similarly believed to be allowable over Horton et al.

Claim 4 (which depends directly from Claim 1) provides that the coating can also include a gradient layer between the adhesion layer and the primary coating layer. Initially, the coating of Claim 4 includes four layers – the adhesion layer, the transition layer, the primary coating layer and the solid lubricant layer. Horton et al., on the other hand, only teach or suggest a three layer coating having a metallic interlayer, a transition layer and a mixed metal outer layer. Further, Horton et al. do not include a gradient layer, as set forth in Claim 4. Horton et al.'s transition layer comprises alternating metal carbide layers and metallic layers. (Col. 3, lines 14-16). Such alternating layers do not provide a *gradient* layer. For at least these reasons, Claim 4 is believed to be allowable independently of the allowability of Claim 1.

The Examiner also rejected Claims 1-15 under 35 U.S.C. §102(e) as being anticipated by Doll et al. Publication No. 2003-0185478. Claim 1 has been amended to include the subject matter of Claims 2, 7 and 12 to further define within Claim 1 the composition of the coating. Doll et al. do not disclose the coating as now set forth in Claim 1. For example, Doll et al. do not teach that the solid lubricant layer is "chosen from the group consisting of MoS<sub>2</sub>, WS<sub>2</sub>, boron nitride, graphite, PTFE, and metallic solid lubricants." Rather Doll discloses only that the "coating layer" is made by "sputtering W or WC targets using a mixture of Ar and C<sub>2</sub>H<sub>2</sub> gases". (See Doll '478 paragraph [0035]). Hence, Doll '478 does not anticipate Claims 1-15. At best, Doll '478 can be used as a reference under 35 U.S.C. §103. However, as set forth below, the subject matter of the

present application and the subject matter of the Doll '478 application were co-owned at the time the claimed invention of the present application was made. Hence, under 35 U.S.C. §103(c), the Doll '478 cannot preclude patentability of the present invention.

**Co-Ownership of Doll '478 and The Present Application.**

The Doll '478 application is assigned to The Timken Company, the assignment having been recorded at Reel 012764, Frame 0524 on April 2, 2002. The present application is also assigned to The Timken Company, the assignment having been recorded at Reel 015079, Frame 0899 on March 10, 2004. Further, Applicants of the present application (Gary Doll, Ryan Evans, and Carl Ribaud) and the applicants of the Doll '478 application (Gary Doll and Gerald Fox) are all employees of The Timken Company; have all been employed by The Timken Company since prior to the filing of the Doll '478 application; and are all under an obligation to assign their inventions to The Timken Company. Hence, the subject matter of the present invention and the subject matter of the Doll '478 application have been co-owned since the conception of the present invention. Therefore, in accordance with 35 U.S.C. §103(c), the Doll '478 application cannot be used to preclude patentability of the claims of the present application. 35 U.S.C. §103(c). Withdrawal of the rejections based upon Doll '478 is thus respectfully requested.

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In view of the foregoing, Claims 1, 3-6, 8-11 and 13-20 are believed to be in condition for allowance. A Notice of Allowability with respect to these claims is thus respectfully requested.

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Respectfully Submitted,

  
Jonathan P. Soifer, Reg. No. 34,932  
Polster, Lieder, Woodruff & Lucchesi, L.C.  
12412 Powerscourt Drive, Suite 200  
St. Louis, Missouri 63131  
Tel: (314) 238-2400  
Fax: (314) 238-2401  
e-mail: Jsoifer@patpro.com



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## **APPENDIX A**

### **PATENT SEARCH RE USE OF "TERNARY ELEMENT"**